

ANT/LAN/01

0013

INDEX

Page

Subject

Sample numbers are all
prefixed with 7428(
samples^{NOS} used by Langworthy project
are from 2601-2722

Locality system used:

Each photo used & thus referred
to under loc:** will be
prefixed by a number (see *
below) this number refers to the
point "O" and "number" recorded on
the back of the photo and ref. to
the actual prints used, must be
made. These are kept in the collection.

Name Run / Photo 1973 A.L. ↑ (alt.)

Sample N^os.

POINT SYSTEM.

N^o Sample N^o

DATE

LOC.

* P+N^o / Run / Photo N^o (3/CM9/050)

PHOTOS.

Desc. or drawing.

N^o / Roll N^o C / B/W

LITH:

STRUCT.:

ST True NTL (f.e. measured)

DIP

LIN. Dir + Pitch (f.e. desc.)

NOTES: Homog, Isotropy, f.e.

Heterotachic, Sym. Penetrative.

GEOMORPHOLOGY:

ICE NOTES:

Nº:

DATE: 5/1/73

LOC. 1/CMT, R.1 / 146

PHOTO:

LITH. (Bio) - Ksp - q - n
Bio - q - sch n

STRUCT:

7/1/77
STINEAR.

Ky. Pzt

Bio-Ks- ϕ . M.P.

GRANITE

RC9 NAT MAP.

PHOTO "1"

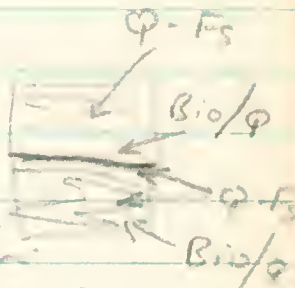
LOC 1

PHOTOS. N^o 30, 31 ROLL 3

STRUCT

ST WNW

Dip. 75 SSW



NOTE: - no observed line

Photographed 2 folds $\lambda \sim 2$ cm

- spread out quartz rich feldspathic lenses in Bio- ϕ -
- Schist band

N.B. MnO. Copper (green)

staining & ~~small~~ cubic gold

coloured sulfide seen in Hand

Spec. approx 1 mm across & probably

Chalcoanthite (or Pyrite)!

ye. to tan in the other folds.

Loc. 1. as above.

PHOTOS - 32, 32, 33, 34 ROLL 3

STRUCT

meso fold. axial
 $\frac{\lambda}{2} = 10\text{cm}$ similar folds
almost chevron like folds
typical of bio-rich deformed
rocks.

the fold surface S_{n+1}
defⁿ by confocal layering
: Biotite (100%) lamella up
to 3 mm thick inter-layered with
Biotite - Quartz bands up to
1 cm thick.

N.B. with the ϕ -Bio band
the Bio has been reoriented
sub parallel to the a.p. &
this defines S_{n+1} st. NW
DIP. 90°

Close of plates indicated to show
 S_{n+1} the new surface S_{n+1}
sub parallel to a.p. in minor
high fold that is of the same
generation as the other folds.

PET., Kspar - ϕ - m

Bio - ϕ - Sch - m

m.c. - Bio - Sch.

S_n - comp. layering defⁿ
by - Kspar / Quartz
bands
- Biotite - Quartz
bands

S_m - mica orientation
in pelitic bands -
sub parallel to q.p.

a p approx

SL: WNW

dip 80 S 74

Plunge \approx gently
to the E

all - all the outcrop
(loc 1) consists of inter-layered
meta-schist, Biotite rich;
(Bio- ϕ -Sch) quartz bearing
bands from a few mm to 3m
thick (as described above) and
Kspar (pink) - Quartz rich
mica poor bands from 1cm
to 10m thick (often 50/50 outcrop)

the layering is probably S_n
with S_{n+1} generated in the biotite
rich band mainly by reorientation
during isoclinal folding. As
such S_n represents a primary
compositional layering between
Fe/Mg + K/P layers. Naturally
the less competent ϕ bands
have faulted, lensed and
folded, see fig. 3, where is the
Bio-unit here reformed to
deformation by isoclinal
folding and generation of S_{n+1} .
(mica orientation)

These rocks are typical
meta pelites (amphibolite
facies?) interlayered quartz
rich gneissose rocks.

Isoclinal folding & mica
remnant evident in the biotite
zone & extreme lensing,
micro faulting evident in the
Ks - Q bands!

N.B. the Ksp - Quartz bands
are layered from 1 cm to 15 cm
- layering is defⁿ by compositional
variation (abundance of Q - Ks -
- Bio).

Photo 35. (last shot.) No 3

- micro fault & mobilization
of Kspar. Q phases in the
(Bio - Kspar. Q - gneiss) band

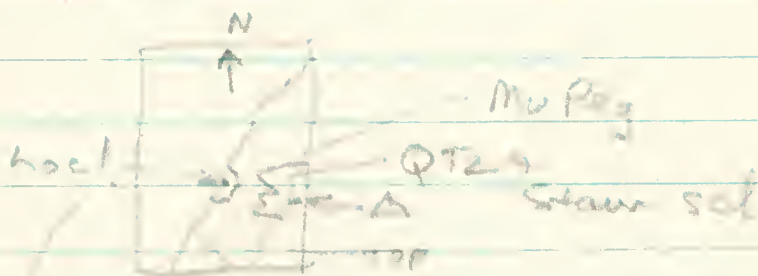
PHOTO N° 1. ROLL 4

LOC 1. STINEAR "9"

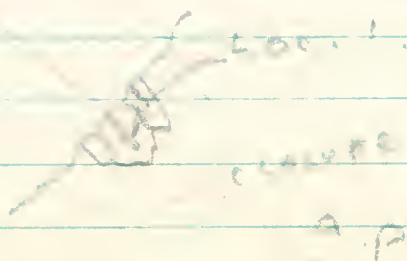
- in some slope, pyroclastic
folding - rock flows same
as Clafac - large boulder
some probably very recent
like

From the air - loc 1 may
be the core of a fold

PLAN



Possibly



if bright ground
center of fold core
of massive
pyroclastic fold
then macroscopic
folds appear //
a for some
style. 9

N^o. 2601 core of fold

DATE 6/7/1/73

LOC 2 / CM TR 1 / 146. MT STINEAR

PHOTOS

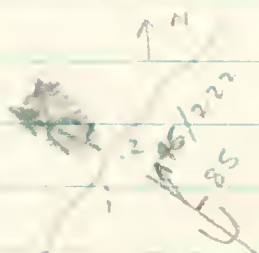
LITH. Bio - Ksp - ϕ - η - homogeneous
vague anisotropy, preferred orient. Fe/mg

STRUCT Macroscopic $\lambda = 5m$ fold
loc 100m ² to the NW of
loc 1

St ap 222 mag. (WNW)

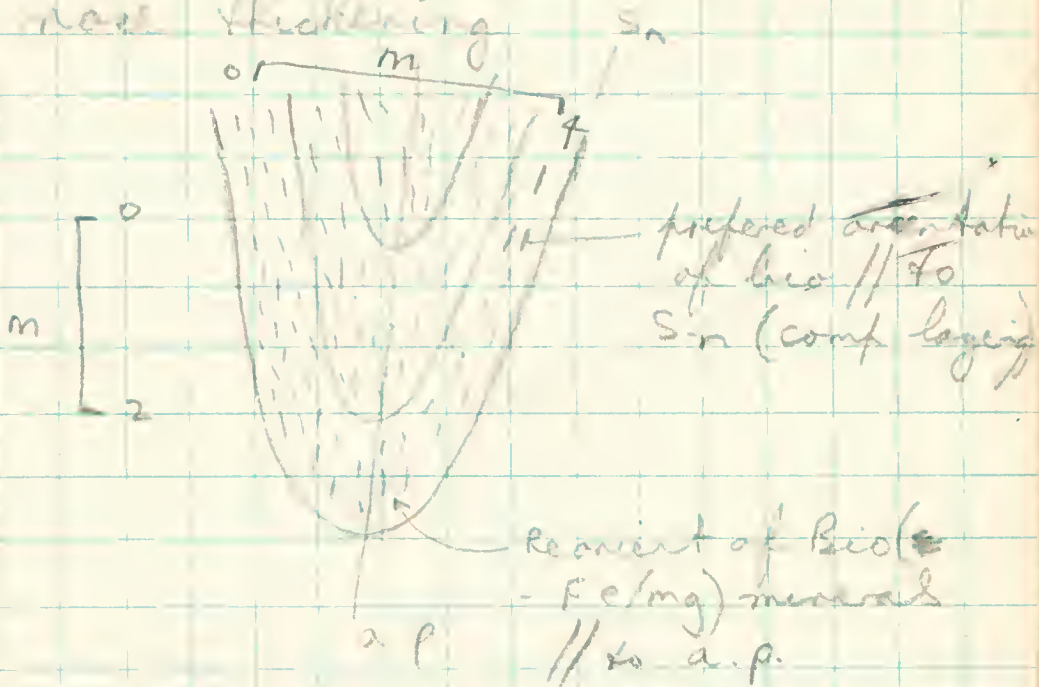
DIP α P 85 N^o (measured)

Plunge 45 W



fold surface def. by vague comp.
layering - mainly more (or less) bio
rich bands. Complicated by the
reorient. of Fe/mg (Bio?) minerals
in the ap sec dia over fold.

fold style - 'Similar light'
(almost vertical) fold with considerable
near thickening S_n



S_n defn by bands rich in
Biotite (possible plane of
slippage during folding. - Comp layering)

The rock is quite quartz rich
even though the C. Indene is
probably so

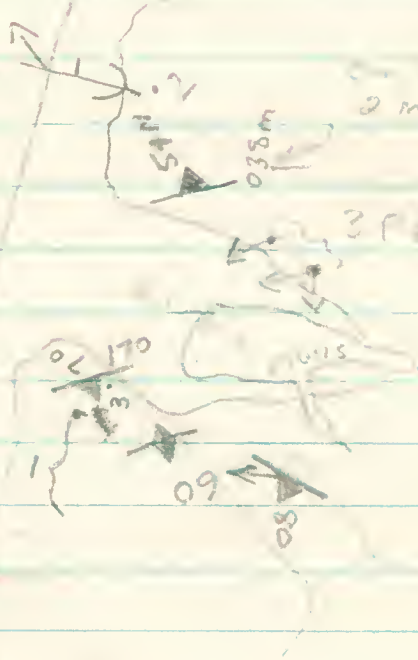
7/1/73.



off barometer
7 sec. reading
off the compass with
no deviation etc.
lighting - barometer
at all 21 ft

Field

camp
7/1/73



on top of the bar
2 m thick

3 photos for 11, 12, 13

light colored
unit

NO: 2602

Bio - Fs - Q - n

Type sample from between
2 & 3 - layer with Bio - Q - S.

NO. 2603 Mu - Bio - Q - Sch n

DATE 7/1/73

LOC. 3 / C M T R 1 / 146 WESTHEAR

PHOTOS NO 17? Roll 5

(after general scenery
photo of layered breccia to
loc 1) leucocratic unit
showing style of metamorphic
imprinting.)

that including Geo. layer
of Mu - Bio - Q - Sch n
hand in Fs - Q - n

(Poss Ky in Mu - Bio - Q - Sch n)

Photo shows the way the
mica rich band is being
parted by the more competent
Q unit during deformation.

LITH (Ky?) - Mu - Bio - Q - Sch n
Fs - Q - n

STRUCT S1 170 mag Comp. Banded
DIP 70 SE

unit, quartzitic, well banded (10cm
to 2m) unit NB Mica orient isch // 6
Comp. layers.

Mt. Raker

See Deck notes -
gran appears discordant
from intrusion. Contact
with quartzite discordant

- BIF lie within Black
slate sequence.
as an iron rich
unit & nothing more

Rock Types Black slate
Acid-gneiss
"Andersite" intrusion
BIF / Tuffite
Quartzite, f.g. felsic
Quartzite - white
 - Orange
 Banded
Amphibolite
BIF congl. (Phases)

NO: 2604/11

DATE: 9/1/73

LOC: 4/C.M.R.9/064

PHOTOS: (scenery outcrop shot taken
yesterday Roll 6, for
Duck - ref. the back

LITH: Banded iron in
black slate rock
up hill from red. narrow
jacoblite / Banded iron formation
- BIF affon son (up h. 30m)
- T. granite sample for analysis

STRUCTURE:

2609. NB. Two fold. interesting
folds - some evidence
of a p. f. e. trace on
first fold

2605 - shows micro banding
of iron rich layers in
the black slate rock
1 mm to 5 mm lamination
- quite common near
the BIF

2606 f.e. - slaty cleavage
- kink folds $\rightarrow L_1$
- Mineral elongation $\rightarrow L_2$
sample shows " L_1 & L_2 "

2607 f.e. - penetrative
comp layering def.
~~f~~ a kink?
 $S_1 \times S_2 \rightarrow L_1$
where S_1 - comp layering
 S_2 - slaty cleavage
- L_2 a mineral elongation
direction

2608 Tight "micro" folds in
even banded black
slate - NB look for
a p f.e.

2609 sigmoidal flexural
monoclin fold in even banded black
slate showing band thickening
in the low stress zone. =

2610 Tight "isoclinal"
folds in banded iron
black slate rock -
- possibly the same general
as the thin bands.
The four black slates.

2611 Kind, folds in black
slate

NO 2612

DATE "

LOC: Just S of 4 / cm 9 / 059

PHOTOS -

LITH: Talc - Calcite rock
- quite a thick "interof"
adj. to snow bed

13. Bloody awful day!
- 15 - 25 K² - 1000 ft

MT. RAINIER CAMP

N° 2613 - Tectonics

DATE 10/1/73

LOC. 1/6 in. S/082

PHOTO: 8 shots of 2 measuring the
fold into 2 or 3 folds
of fold. - end of Rail G

LITH: B.T.F.

- a unit of laminated
sandstone, 1/2 in.
very thin and subark
with laminae from
5 mm thick to 1 1/2 cm
thick - no apparent
alternation of sand
and silt.

NS - 1/2 in. of 1/2 in. sand
with the sand layer

STRUCTURE: More of a fold

λ = 1/2 in. - 1/2 in.

3 folds - strong that

the fold is of the same

Verticle



road is lighter in color
than the surrounding
to the left the other
is finally, consisting of
sand (shallow) and
sand is highly in-
undated, a few percent
of alluvial sand in
(shallow) sand
clay, looking like
folding (the left) sand
is the same (the right)
clay is the same (the right)
The left is the same (the right)
SW of the change is marked by
a line to the SE (see below)

The sand is brownish
the color of sand. It is
a hard, brownish sand
is the same. The sand is
the fold surface. S. of the
Coloquial. Looking to the

N.B

Concentric fold style
seen very to right
similar folds where
sandstone is competent
and suffer extreme
compression - photos
illustrate both styles -
the concentric and the
classic tight (almost
enclinal) 'similar' folds
of the squeezed core zone

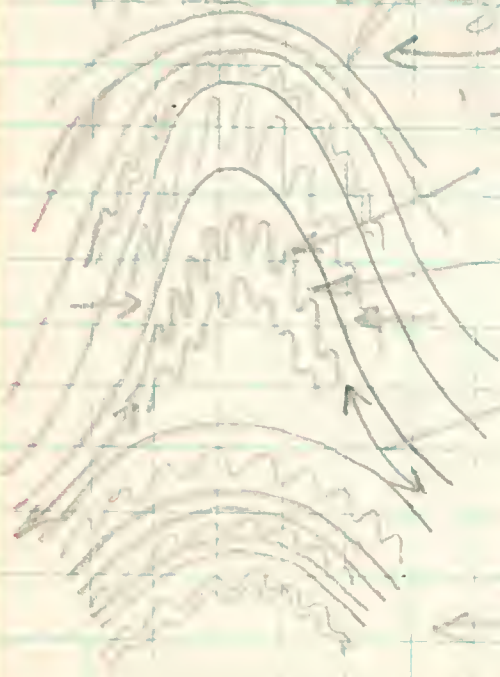
← concentric style

DISHARMONIC
PARASITIC FOLDS

similar compressed
folds

bedding plane
offset

← concentric style



axial flows

fabric element

and above these are
striated, sometimes (axial
folds) or more generally
that the planes of the
a.p. are not parallel to the
I.C. (see above) [The
fabric element is almost
on the same plane fold
the parabolic fold axial
flows parallel to the original
fold axis, are themselves
flow folds, i.e. are thickening
in or with the flow direction
the thickness of the folded
band remains constant

a.p. meso fold.

a.p. parac. folds.

The parabolic
folds are typically
disharmonic &
may be concordant
or similar in style
def. of a.c. comp. of
the band

W. C. readings were taken
about 100 ft. from the
shore. The tide was 1
m. from low water. The
depth was 70 ft.
measured.

Int. area all from low
was 10 ft. more.
From this data I need
off the shore of the

see photo of the

)

The foraminifera fold
 is clearly visible
 in the center of
 the folded laminae of
 the chert. The
 folds are sharp and
 the chert is
 white. The
 folds are
 chert. The
 folds are
 with no
 one state with
 chert. The
 folds are
 on all sides.

f.c. N.R. a.p. curve up north of
 St. a.p. 155' mag
 Dip. a.p. 65 SW
 River a.p. 41 SE (/190)
 with S.W. dip. → f.c.
 General
 elongation
 & strike
 Cold 11

Bloody beautiful calm sunny
warm afternoon!!

N^o 2614 LITH: CARBONATE UNIT IN B.F.

Loc: 2 / C.M. 8 / 082

PHOTOS - / last couple of shots
on Roll 7 - distance
macroscopic fold style
(same as loc. 1 -
orient. & style)

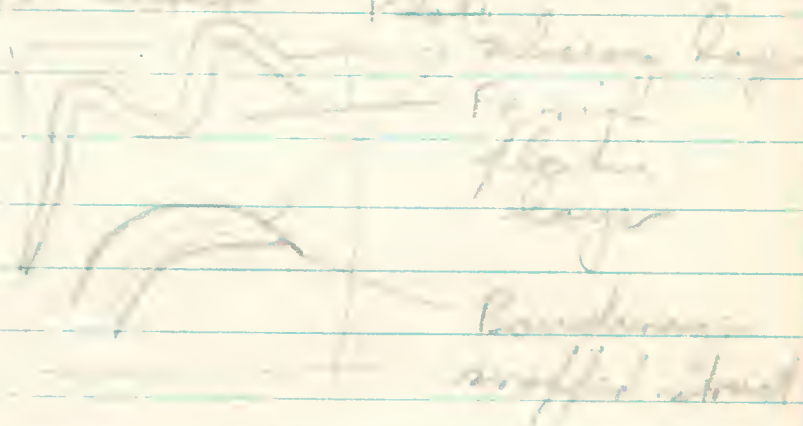
- Roll 8, No. 6 - 26 off

- B/W shots of macro &
meso fold style
fully formed & fold at
the back of 2nd 2.

STAND next loc 1 Concentric
fold give way to tight
rim-like folds developing
of a composite of the
white & darker of composite.
Photos cover most of
the wide variety of
fascicled fold styles,
showing concentric disharmonic
conformant (quartz rich) layers
for a few miles 25-30 mi

and minor (almost invisible)
 slight squarled parajitic
 folds - all with their
 a p. parallel to the
 macroscopic folds &
 of roughly the same orientation
 and size.

Note some less plastic
 layers have buckled and
 snapped during stretching
 in the thick plate.



Extreme diskarnage flow
 folding in some layers
 suggest very plastic F.e.
 layers.



1. The at loc 2

The macroscopic folds

X 10m at top SW and LI

2 Dip. ~ 60 SE

Plunge ~ 40 ESE

all unit long.

The fold style of the large fold - complicated

Anticline - parallel folds

- in general the fold is both

a p. is parallel to the Macro

fold and a localized

transverse compression

some degree of disintegration

micro fold to develop

Plunge of parallel folds

is related to the Macro fold.

N.C. Carbonate rock unit

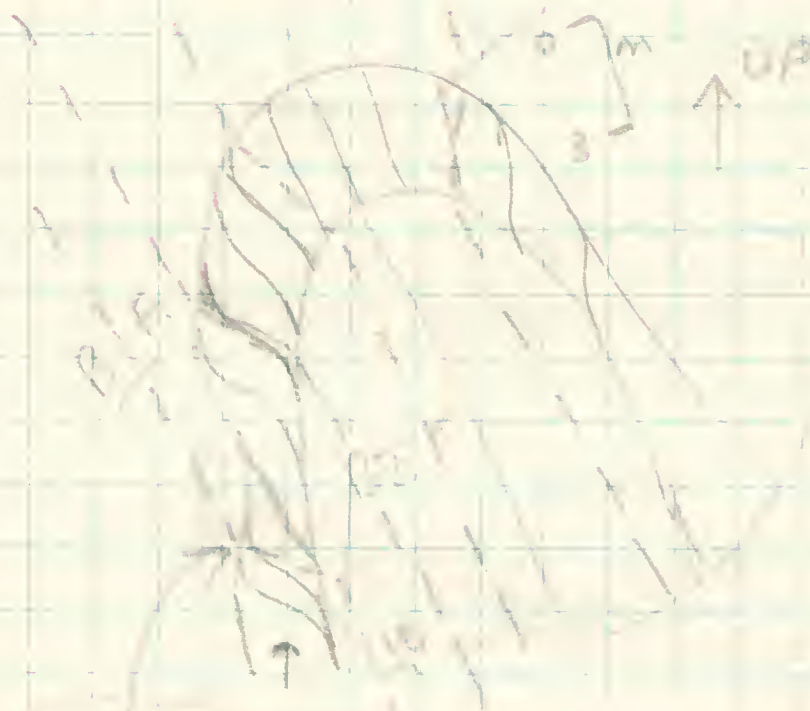
with the BIF (2 photos)

has a strongly developed

deflected cleavage. The

foliation is sub. parallel

to the a.p. →



Deformed
 cleavage
 sigmoidal boundary
 in situ

Photo
 at station

- the boundary between the
BIF & the sch unit
causes the a.p. cleavage
to differ to producing
"fan like" foliation of partings
in the sch unit



No 2614

The cleavage has a sigmoidal
appearance due to boundary
conditions



The a.p. in the BIF
is the a.p. of Parasitic folds
whereas in the carbonate sch
unit it is a primary

VIVALDI

CONCERT FOR DIVERSE INSTRUMENTS

DONOVAN *

WEAR YOUR LOVE LIKE
HEAVEN

EUGENE ORMANDY - PHILADELPHIA
ORCHESTRA "1812 OVERTURE"

(NICOT ON BALD MT. MOSSOR)

1812 (TEHRANOS)

PULOVSTAN DANCES (BORODIN)

original for like parking

Nos. 2615 - 2622

- sample for anal
of BT F. structures

N^o

DATE 12/1/74

LOC: ~~3/10m 13/297 Bl~~
P140705. Fall 12 NOS 16 - 23 odd

- Humbug Rock
- Tele. to of
Humbug on Humbug
gully - affore
100' of self in 100'
- W.A. of Dick T. glass
ice - along Yarns
shifting as ice
4 out of 100
looking to the south

LITH 1. - Quartz - feldspar "magmatic"
rock - Q-Fs "inhabitant"
in Q-Fs - Hall - A
- Humbug Rock

- angular, elongated
crystals of Q-Fs

2. gray to pink banded
quartzite - some Mn-
chlorite

3. quartz rock - mafic gneiss

4. Felsic (or acid) - bio - Hbl.
- Q - garnet
- similar to

Felsic of the center

5. Dolerite - in two types
5. Pyroxenite

STBVCT

- The area to the NW of
the camp is a complex
sequence of mafic to
rich amphibolite, quartzite,
and gneiss & quartz gneiss
striking roughly N. &
& dipping often 60° to the WSW
& with a minor line
the pitching 40° to the south

This sequence has been
intruded by pegmatite
(Q-Ts-Tourmaline) & and
Dolerite? (massive
fine grained prominent
mafic fool like bodies)

- Minor garnet rich gneiss &
the abundance of quartz. Amph

+ quartzite (conformable
units up to 4 m. thick.)
suggest an amphibolite
facies sequence of meta-
sedimentary rocks.

18/1/73.

Red horizon in the south
from campsite - garnet bearing
- felsic gneiss - and quartz
amphibolite & well
banded hornblende gneiss
all that we found!

- a large bed of amphibolite
rocks appear to have
supplanted the hornblende gneiss
& the quartzite are
probably part of the same
unit.

W. 2nd St.

300 ft

C.E.
N.C.

840

60 ft

200 ft

10

100 ft

100 ft

200 ft

MT. RUBIN

№ 2623.

15/1/79 Mt Rubin

Loc 1 / CAG 6 / 087

24

metamorphic - quartz
appears to be the same
as some of the fossils
we saw of the fossils

LOC 3 out of 4 on Loc 1

NC-2629

(Top R.H. corner of Photo
No 35 / Roll II)

PHOTO. Roll II No 35

of P. ...

... carbonate with
fine granular texture

- X bedding ...

... of ...

... carbonate ...

NR

... not ...

... of the ...

... of ...

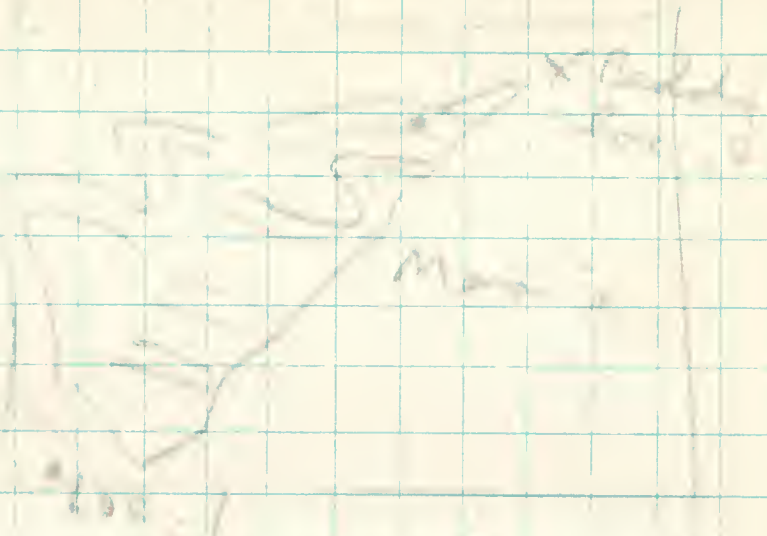
... 30°

light coloured unit above is about 2 1/2'

thick. - interbedded with shale dep. 50

9470

No 35 12-2-11



A lot of people
have been going to the
concert at the
opera house

(white Band after 3 1/2 L. h.)

N.C. Man. school center
a lot of very poor
and very old
what the man is with
a lot of the old
and the

NOTES from a warm sunny
place about the folding on the
W side of Mt Rubin

" On the macroscopic scale the
folding is disharmonic concentric
with one or two very tight
almost isoclinal folds. The
unit consist of layered black
& white ~~sand~~ beds & so defn by
the layering. Despite fold style
on the macro scale the folds
appear to plunge to the south &

have a p. dipping to the E. The
folding appears to be restricted
to the B/W unit in the cliff line
the other units appearing massive
homogeneous and anisotropic (dipping
at about 350 to the SSE)

" On the microscopic scale the
folds are very difficult to see.
The unit consist of shale & carbonate
rich sandstone. on the whole surface
carbonate solution deposit

indicate that the shale & accompanying rocks are very carbonaceous.

Mesoscopic folds are rare, constant and so deep for the confocal layering - shale, s.s., carbonaceous sandstone / limestone, siltstone is poorly exposed & difficult to measure the orientation of.

The core zone of a very tight almost isoclinal and reclined anticline

has developed as a p. lineation defr by oscillation of remnant band & streaking along shale surface.

The orientation of the fold was measured. (Plunge 20°)

- Possible X-bedding was observed in the white carbonaceous s.s. / limestone above a kink fold see photo N° 36/11
- unit appears to be right way up
- The entire shale / s.s. or limestone unit is brecciated into fragments a few inches across - like a shattered shale - this parting has no preferred orientation & just abutment

-microstructures"

Interf. The moraine contains a lot of quartzite sandstone massive homogeneous rock med. grained well cemented poorly laminated. This indicates that the massive sand. sandy colored unit overlying the shale & limestone unit is SS. - a more competent massive unit - gives reason to why the layered ^{carboniferous} unit is deformed in almost a flow manner whereas the SS unit appears unaffected.



carboniferous
shale / ss
UNIT

N^o.

DATE. 15/1/73

LOC: 2/CMR6/087

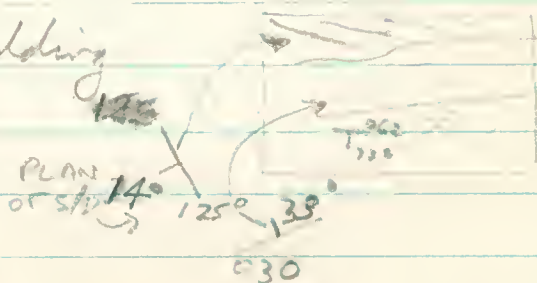
PHOTO Last shot Roll 11

N^{os} 1-5 B/W Roll 12

X Bedding in SS.

LITH. Well cemented quartz
sandstone.
Lamellae defining S₀
are from 1 to 3 mm thick - slight
comp. variation of in SS.

STRUCT X. Bedding



see photos
- does not show any of the
indicate fluctuating flow direction
ie changing current direction
with consequent truncation of
previous lamellae & deposition
of a new set of X beds at an
entirely new orientation.



E

27 250

3

100



H

W

STRUCTURE

2625.

ST 100 mag. on Sn defⁿ by comp.

DIP 27° ESE lamellae Q/Ks/Bio. #

LIN. 38°/050 mag. comp. streak.

NB. pitl →

(along of lamellae)

Sn ** defⁿ by the preferred
orientation of elongatedlamellae like pods of

Q/Ks/Bio. - the rock in outcrop

did not have a well developed
appearance but a "well preferred
orientation" appearance.

The orientation is a comp.

stretching - elongation
of lamellae pods in the 3D.** Pref. orient
of Bio // the

No. 3627

DATE 17/1/73

PHOTO —

LOC: 2/MES TR. 3/055

LITH. Basalt dyke. - major
outcrop of mafic dyke
in the area

STRUCT - dyke exposed about
10m wide. Proc
disaggregated outcrop fragments
detritation of material
of dyke top caused
by the dyke water
unplanned out

No —

DATE 17/1/73

PHOTO: NGS Roll 13

LOC: 3/MES TR. 3/055

LITH. As at loc. 1

STRUCT - narrow 2 faults -
disaggregated narrow
boulder $\frac{1}{2} = 3\text{-m.}$
 $\frac{2}{2}$

the 2 folds, are similar in style with considerable rock thickening, - no recipient of thinning - folded surface is 3m deep by comp. layering - lateral also steep

NO: - 2628 Tectonite

DATE: 17/1/73

PHOTOS: -

LOC 4 / MES TR 3 / 056

LITH - Bio - FS - Q - n

- NB & f. Loc 1. - as trap appears to be much older in place red & f. reflects change of facies & degree of SE weathering

STRUCT. Minor fold locality.

- a series of small λ similar isoclinal folds.
 λ from 2cm to 5cm
2

No: 2628.



the folded surface is
definitely unfractured
between C. bio / F. 2 / 1 - on
S. 2625

Reorientation of bio // to
the a.p. defr. S. and
the core zone of the folds
S. nearly completely
overprinted S. - ref. to
sample 2622. for high and
tectonite.

St a p toward the southern tip of sample

DIP: a.p. 70° S.

Plunge 90° 70° - near
"infract" F. 2 inclined
fold

N° 2629/2630/2631

DATE 17/1/73

PLATE

LOC. 5 / MTS 3.0 3/266

LITH: green micaceous / hornblende
bearing C. go Bio - F.
foss Colearian. rock

Crops out as a 3m thick
very coarse grained orange
spotted bed of sandstone
20m long - concordant with
foliated 2m. fairly
laminated.
- 1 Poor calcareous sand.

No 2633 / 2634

DATE 17/1/73

PHOTO -

LOC. 6 / MES. TR 3 / 056

LITH. Change of rock type (2633)
to a green mudstone

Laminated (Fe) - Bio - 4

in thin, interbedded
by sub-parallel fragments
(and sand equivalent) (2634)

quartz, feldspar, clay

may be micritic (dark)

glaucous (blue)

very large fragments (2635)

It is not clear whether
isolated, full, or not
from the whole rock

(as a whole, micritic
of a green material)

1. It is not clear whether
it is a whole rock or not

2. Bio. is not clear whether

it is a whole rock or not

3. It is not clear whether

it is a whole rock or not

The smaller fossiliferous
units are concordant
with the foliation.

STATION

ST

Toward the center of the

DIP

65 S 42

The gray limestone is
bedded in a southwesterly
direction.

The foliation is indicated
by the configuration of the
of the limestone beds
which dip southwesterly.

Sections of limestone
beds are bedded
parallel to the foliation.

Q - Fe - Fe

(2570) 5

Fe (2570)

Fe (2570)

11° 2635.2525

DATE. 17/1/23

PHOTOS -

LOC. 7/MES TR 3/056

LITH. 2635

- fine grained Biotite-Quartzose
greiss. extensive outcropping
out.

mic. conf. layering
by the prof. substitution

2636

- Biotite rich zone.

Chlorite rich - zone.

replaced mafic dyke

- near small biotite

band! but band 0.5m

thick strike & Dip 1/10

replaced zone. in at band

middle of Conf. layer & Dip
60° S.E.)

- sample 2636 crops out
as an elongate pod 3m
x 15m

STREET.

ST road Middle of the

Dip $60^{\circ} 54'$

Sn - dip 4 by main camp
laying up to sample
2432 ✓

NB Between Pts 6 & 7

Many fragments of
dyke include grey-green
alteration of gabbro (60° Dip to the south).

Noted small 0.5m x 9m area
with foot-foss basaltite.

Grey gneiss has foot of reddish
✓ ✓ ✓ Loc. 6

gneiss similar to Loc 1 in
it is concordant foot

like units - boundary of grey
gneiss. Loc 1 is concordant

with a gradational contact change
represented by the red gneiss

100m

NB the green material reported
Loc 5th occurs in the pegmatite
veins & seems to be a green
feldspar that is probably
associated with the pegmatite
injection. - seen as thickened
veins in amphibolite

N^o. 2637

PHOTO -

DATE -

Loc 8 / MES TR 3 / 056

LITH. / Garnet - Biotite - Fs -

- P - gneiss.

- well laminated with

Bis fol oriented // to

lineation. crops out

with varying amounts of

gr. right half 4-45 and

1 of the out.

STRUCT ST. Trend of middle of C.

DIP. 60° SE.

ref to ENCL 36

rest of the road at the N. end
of the road to the cliff edge
// to the left of the cliff edge 2637

No. 2638

DATE 17/1/20

PHOTO

L.DG 9/MES TR 3/056

LITH Amphibolite / foot
5m x 3m (E end)

STRUCT

concordant foot

Charged camp to off. headland.

Photo Roll 18 N-24-23

Loc: 1 / MESTR. 3 / 050

Line 1 Paula Del Chale. 1940

2642

- LINS - Rio - 2ha - Q - Conglom
2639 / 2640 / 2641

NB 1 abundance of Ga
2 Mn content
3 high quality %
4 Q_{T_2} 1 ft thick.

Structure One station to have a
light so could see
the pillars

limestone/sandstone
limestone/sandstone
limestone/sandstone
limestone/sandstone
limestone/sandstone

SS? mag.

bedding? St 145 (EW) 4th N
Dip 81 N
lin 35 to 355 (NW)

Shale dip by having
as well as the
surface & difficult to
determine relationship
between SS & Ss

Dip is steeply to the north
of the dip of elongation
of the pebbles (// to
normal elongation)

pebbles range from 1cm x 1cm
to 2.5cm x 3.5cm - typical
size 5-10cm x 3-4cm

under the surface of the rock
- Q - in clasts.

The sandstone (fine grained
fine - Q - in clasts) is a fine grained
fine grained sandstone
with the clasts of quartz
up to 4 mm thick. The
clasts may be interbedded
with X bedding - very dark
(see photo) - sufficient to say
that it is very good to say
that it is a fine grained
sandstone of quartz (see sample)
Bedding is between 3-4 cm
apart. The sequence of the
sandstone is a fine grained
sandstone. - 3-4 cm -

SS of fine grained - fine grained
quartz grains. The sandstone
is a fine grained sandstone.

afternoon before leaving
day of departure

DATE 2/1/73

PHOTOS 1-1

LOC 2/MES I 173/058

LOTH

2543 - calcite thin -
- purple like clay
- approx 10' thick.
- Porous - calcite
- in a zone of quartz
- & quartz. Not a
- glauconite. NOT a
- disconformity.

2544 - thin calcite
- in bed - thin - ga - Q -
- grains. No calcite
- in bed. ga - B -
- Q - calc - thin. Calc. Sm
- in sample // to regional
- fol. - no calcite
- in zone of quartz.

2545

South of National Ave.
about 1/2 way to the
west of the center
of the town.

2698 The plant
is much branched & the
grass leaf layers
are very close set.
+ 50 147 mm.

Dir. 22.14.34

LIN 29/20

The reason can be
discovered by looking
up the English name
and will be found to be

with fol. in f. joints
as regional fol. is not
going to regional schistosity
(retrograde).

The gray gneiss has many
small, abundant quartz
feldspathic garnet, biotite
in f. joints & quartz
as to the matrix, it is
very quartz-rich gneiss.

The gray gneiss is spec-
ies bath of a garnet-
biotite schist & has an
abundant quartz. The 2645
is a white quartzose &
feldspar gneiss.

The gray gneiss is spec-
ies bath of a garnet-
biotite schist.

LOC: 3 / MEST.R3 / 050.

N^o 2035
Photo Coll 12. N^o 33-34-35

1. White Eagle looking SE.
grainy
of F54
2. of F54 left by
narrow elongate (thin)
of F54 surface
see 2506 - NB
parallel to ^{the} bedding
that is faulted
with narrow
scale 4 // to the
primary horizontal
foliation

LTH Bio? - Quartzite feldspathic
- gneiss.
G.I. grey gneiss
- NB. The small nodules
< 1 cm thick x 1 in. long
Base of F54

mesic minerals - typical
like part of 1st floor
or middle floor
ST 162

ST 162 mag - deft by prof

and of B.S. 12/15/15

DIP 67N

LIN flings about 20° to NW
all the way

ref to plates of mineral &
structure

7th sample of plate are
typically what you would
expect from a volcanic
quartz - feldspar
unit

(2646, 2647 collected
in a hell of a hurry due pending
H.C. arrival that didn't! Both of
SS. unit on the Very Southern
tip of M.E.S.)

114. 2548

DRC 201/15

PHOTOS. -

LOC 4 LINES T P 2/058

LITH: amphibolite - mafic
dyke that cross cuts
quartz. feldspathic
unit.

STRUCT -

discordant dyke

From base of dike to camp

- one flat of fess conglomer.

Veins south - feldspar of

to 30cm X 70cm of

quartz. feldspathic material

quartz. feldspathic material

but very different from the

quartz. feldspathic material

quartz. feldspathic material

- one flat of quartz - argon

- quartz. feldspathic material

parted abundantly

extremely deformed, possibly
sheared out - very thin
massive layers - from
the base - the layers
between the 2nd & 3rd camp
the grey ones from
dark & some deformed
slightly darker - some
red with white biotite
bands but mostly amphibole
rich fine grained units
up to 10 m thick. mass
but fragments were
quite fine - P.F.B.N
- concordant into hard
up to 4 m thick.

The regional foliation is
parallel to the bands
it was mapped.

much of the
4. metamorphic zone.

longitudinal surface of fossil
foliated, 1/4" grain.
Old ldy - well developed
in matrix foliation, but
partly developed of by
post growth of matrix
bedding - the apparent
- foliation with
Old rock suggest very
low grade metamorphism.
Small zones (linear types).

No 2649

DATE 2/1/73

PHOTO Roll 14 No 1 - Marble

Roll 14 No 2 - elongate

pebbles in deformed Congl

LOC S/MES + E/1058

LITH Deformed Congl + coarse
quartzose pebbles up to
30 cm long usually

200 x 900 x 1000

elongation of foliation
at about 20° to the N.
(toward the south side
of the syncline)

Strat. outcrop about 50'
across. Limestone
with fossils. The weathering
is a light brown color.
The strata are dipping
northward. The dip is
about 10° to 15° N. E.
The strata are composed of
limestone.



Strat. outcrop about 50'
across. Limestone
with fossils. The weathering
is a light brown color.
The strata are dipping
northward. The dip is
about 10° to 15° N. E.
The strata are composed of
limestone.

N.B. note the small
folds of the strata
by the quartz pebbles
suggesting tight
isoclinal folding. The
of fold. The strata are
composed of limestone.

DATE 20/6/20

PHOTO. N^o 5 R. 11 19

Loc. 6 / MES 1 R 7/958

2. $\text{Fe}^{2+} + \text{H}_2\text{O} \rightarrow \text{Fe}(\text{OH})_2 + 2\text{H}^+$

Q. 12. 2012

Oct. 28/90

γ

25. IV

polygraphite film 44

No. 2600

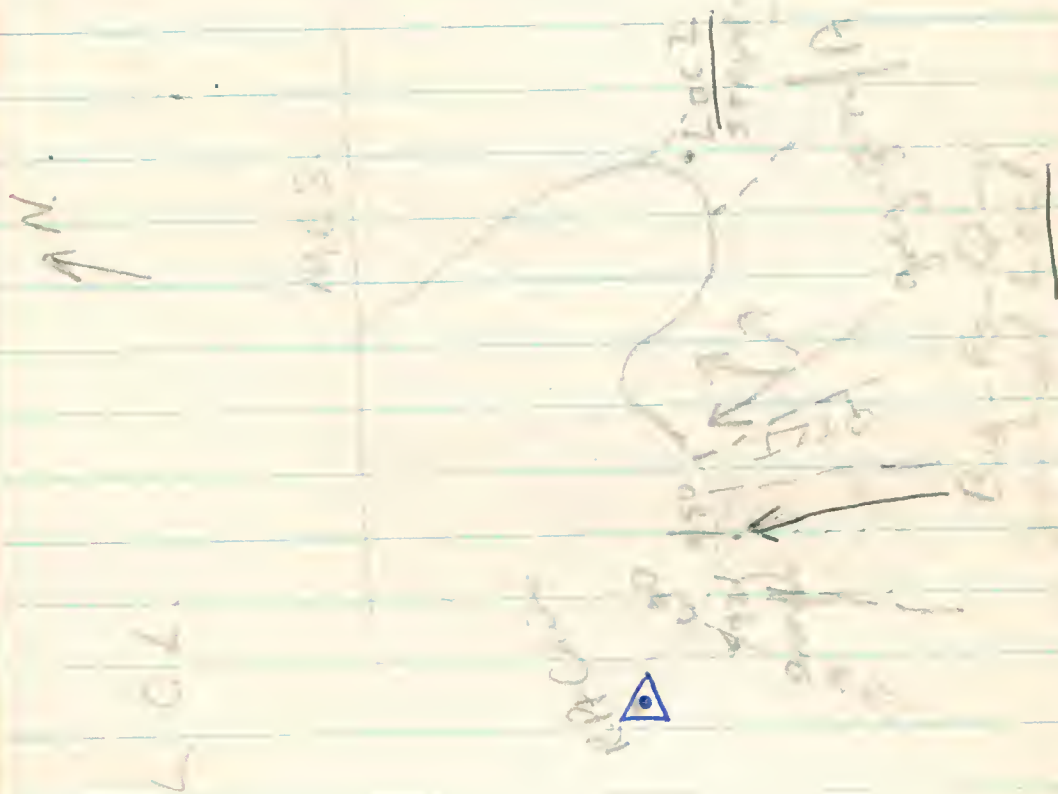
1970

7/11/57 7:20/052

The people who are
the most important
in the world are the
people who are the most
important in the world.

Field Study

Procedures



No. 2651

DATE 21/1/77

LOCALITY

200 1/2 Center Pt. Loc. 200

NOTE: homogeneous Cgd
- Br - FS - Q - section
see sample

STRUCTURE

fold dip. to high
orientation of Br.
homogeneous layered
green

Dip 80 SW.

ST. toward 5th Pt
of saddle

No. 2652

DATE: 21/1/77

LOCALITY

200 2/2 Center Pt.

NOTE: Shale - green -

- Br - FS - Q - section

fine grained
light grey
Dark greenish grey and
green

STREW house outcrop

N.B. Microcline, common
some feldspar, garnet
& amphibole & quartzite
here. Also abundant
the white feldspar
looking rock.

General notes

* from the ~~exposure~~ exposure on Rooster Rt. to the NW
there is a southerly steeply dipping
sequence of quartzite - Bio - feldspar -
- feldspar - gneiss, amphibolite,
c. gr. Bio - Ps - P - Horn, ~~or~~ "granite"
migmatitic gneiss, Staurolite - Bio -
- garnet - feldspar - P - n, and

- Quartzite

This has been intruded
by Mu - F.S. - Q - granites
and amphibolite dikes.

Epidote rich pleached rock
predominate near the contact.

22/1/73

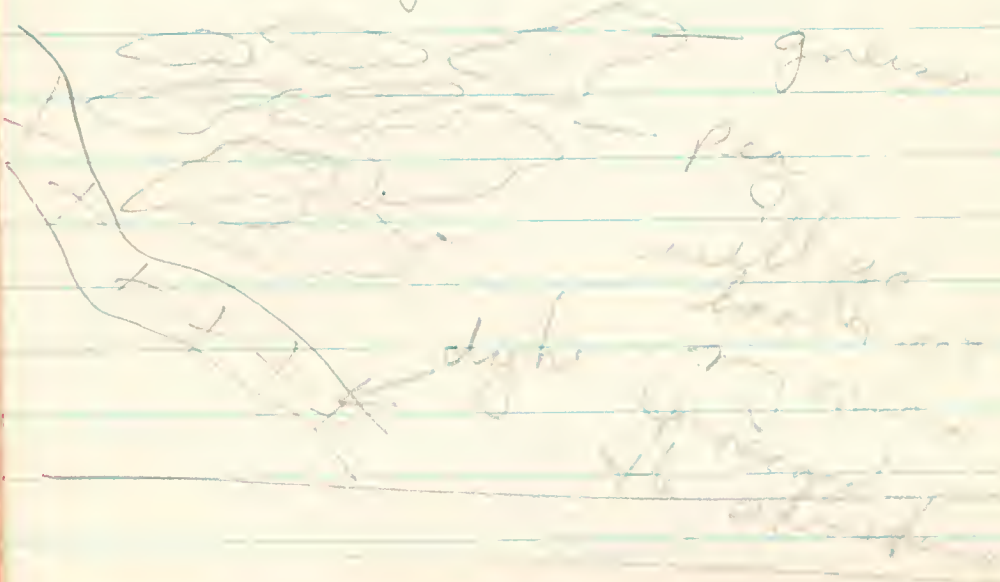
Went out to the Mt. Cliff
line for the mine. The
surface is composed of P-Fs Peg
& dikes with bands of
Bio - F.S. - Q - n - well laminated
migmatite, alternating.

The cliff line has the shape
of a shallow conical hill
of 'impregnated' green
forming most of the cliff.
The green is interbedded
by peg & then by dikes.

The Peg has intruded the
green so that a

cl. ...

a ...
near ... Xenolith ...
a massive peg. ...
intruded gneiss



Nº 2653/2658 - Rooster Pt.

DATE 22/1/73

LITH: 2653 - Cpx gneiss intrusive
near basic dyke
near cliff base
opposite Canyon

2654 - mafic dyke near
26543

2655 - typical Bio-Ts. Q-
gneiss ridge hill
sl. peg. has been
undisturbed.
- few migmatite
granitic gneiss

2656 "

2657 "
showing mobilization
segregation

2658. - dyke rock
at Bonk Pt.
Cairns.

BIRD

San Juan Island bird

23/1/73 100am on

Marine farm post off
Harbour Head and

N

L.A.E.

10/1/22

Loc

Harlow Headland

LITH.

granite - gneiss intruded
by peg

(Heads - etc along escarpment)

Sillimanite - Bio - q - sch

Garnet - Bio - FS - P - m

Amphibolite

q Bio - FS - P - m

grading etc

Calc. sil. calc (Diop - garnet)

q mafic, gneissed by peg

4 right at the headland

- Garnet - Bio - sch

STAVES

general trend near
C. H. Headland

ST Parallel to escarpment

Dip 70° E

No 2669

Loc. 1000 - Mountain

2669 13/1/72

Photo

LTH. med to 5 gr. acid-n
longitudinal, isodipic
Kant. P. G. - granular-n

smallish thin - isodipic - massive
brown - rather bouldery
face (5' x 1')

H/C

comp 65

loc 1



2662 - 1000 m

THE NUAR AC R

No 2660 - 2661 - 2662 | 2665 - Xanthite

Loc 1000 - 1000 m

Photo 1000 - 1000 m

Photo 1000 - 1000 m

(-20°C & +45 KNTS!)

1. 1744.

off of the ...
... ..

1979

... ..

X = 1.7



... ..

... ..

... ..
... ..
... ..

The
... ..
... ..
... ..
... ..
... ..

It has about 30% red iron.

Can be used in the
same way as the iron.

It is a very good
material for the
construction of the
engine.

The iron is very
strong and is used
in the construction of
the engine.

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the engine.

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The iron is very
strong and is used
in the construction of
the engine.

4 pages from all the
the same file

Loc. 2 F 2663/2664

7/2 Both hands flayed
1795

Nº 2664

Makindu - 165 (10/10/10)
flat of a very good
quality
1 mole to 3 on the
4 mole to 3 on the
3 on the 4.

10/10/10 - 2/10/10

Loc. B.

Nº 2665 / 6 / 7 / 8 / 9 / 10 / 11

25572 / 73 / 74

75 / 76

10/10/10 - 10/10/10
- 10/10/10 - 10/10/10
- 10/10/10 - 10/10/10
- 10/10/10 - 10/10/10

10/10/10 - 10/10/10
- 10/10/10 - 10/10/10
- 10/10/10 - 10/10/10
- 10/10/10 - 10/10/10

2. *Leptocarpus* *sp.* *sp.*

(2666)

Leptocarpus *sp.* *sp.*
Leptocarpus *sp.* *sp.*
Leptocarpus *sp.* *sp.*
Leptocarpus *sp.* *sp.*
Leptocarpus *sp.* *sp.*

Leptocarpus *sp.* *sp.*

(2675)

(2667 to 2674) 2676

Em

Leptocarpus *sp.* *sp.*
Leptocarpus *sp.* *sp.*

No. 2677 peg (Dip) from contact between CS & Mig.
No. 2678 acid-mig-n from 10m W of contact.

NOTES: This is a thin, light-colored, fine-grained, micaceous, silty shale. It is a typical example of the "whisper" type which is common in the area. (Dip angle) - 10-15 degrees. The rock is very soft and friable. It is a typical example of the "whisper" type which is common in the area.

2/10
355 W.
8.1/3.23

PHOTO P. 16 + 17

collected fossils from
and shell 10' long off road 17
show light-colored
- calc. fol. in middle
rich phase - that also
flow foliation with an
apparent - the
of west of P. 16 - 17
to 18' - 20' - 25'

LITH. - K. 16 - 17 - very quartzose
(2679) fol. migmatite with calc.
fol. diff. by the preferred
location of Oriskany

2680 P/R. mixed phases. The
mafic are Diopside, a black

2681 Pyh/amp. from hill. and
micro black liolite.

The mafics form small
clots 3mm to 1.5cm

[illegible]

STRUCTURE

HORIZON

PROFILE

Green mts

Banded calc. sil

N

S

3

Acid magmatite

1300

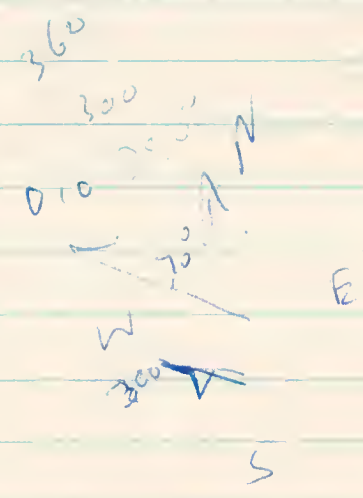
20 275.
815

2683

Tectonite

2. If by going on shore to
 reflect of an open water
 46. 1st of folds west of
 2. 1st of folds of folds

174 } 21
 174 } coming out
 27



345
 70
 275

300



